New Applications of Glass

By JAMES F. BROWN

Men, industries, even civilizations often make greatest progress in times of adversity. During the years of the depression, The Owens Illinois and The Corning Glass Companies realized the value of cooperation in the industry. As a result of their combined efforts and facilities, a third corporation, The Owens Illinois Fiberglass Corporation emerged. A revolutionary product was given to serve man's needs in many fields of insulation, construction, and industrial design.

Fiberglass is manufactured by drawing molten glass from a furnace or tank at a temperature close to 3,000°F. and feeding it through tiny openings into steam jets which draw it at tremendous speed into fibers so fine that a cubic foot of wool contains enough fiber length to reach half way across the United States. The typical fiber is .0003 inch in diameter, and for some types of wool even less.

These tiny filaments are gathered in a forming hood and deposited on a moving belt, usually to a depth of several inches. A part of the process is an annealing treatment to increase flexibility and resiliency and to permit the forming of a better mat or bat of wool. From the forming and annealing process the wool emerges in a well formed, well defined continuous ribbon, subject to complete manufacturing control. This ribbon can be controlled as to width, thickness, diameter of fiber and other qualities so as to permit the manufacturer of a vast group of high efficiency insulations . . . insulations which, because of their unique advantages, have built up wide acceptance throughout the construction and industrial fields.

The material is an ideal insulator for kitchen stoves and refrigerators, since it is odorless and does not absorb moisture to any great extent. It is also being used satisfactorily as a winter protection for shrubs and plants.

Separator plates of fiberglass make possible batteries producing substantially greater power, with longer life than batteries employing other types of separators. In addition to its smaller bulk, with resulting savings in weight and size of electric motors, fiberglass insulation will permit of substantial overloading of electro-magnetic materials, because of their high heat resistance. Motors have taken loads of 100 percent or more, and have operated at temperatures far beyond those here-to-fore possible without short circuits or damage to their insulation. Electric motors of a given horsepower can be made one-third smaller than those using other insulating materials. Being impervious to acids, and unaffected by moisture, the new material promises to solve many industrial problems where other materials have failed. These batteries together with more compact generators, made possible through the new material, should economize on space in the modern automobile. These generators can be operated in very damp atmosphere without shortcircuiting.

This new industry, a child of the depression, offers a new product to the engineer with which he can improve products in other fields. It is new products such as this one that the well informed engineer must note carefully if he wishes to contribute valuable suggestions to his particular industry.